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AN ECO-FRIENDLY STEREOSELECTIVE SYNTHESIS OF NOVEL DERIVATIVES OF INDENO[1,2-*b*]PYRROLE AND INDENO[1,2-*c*]PYRIDAZINE

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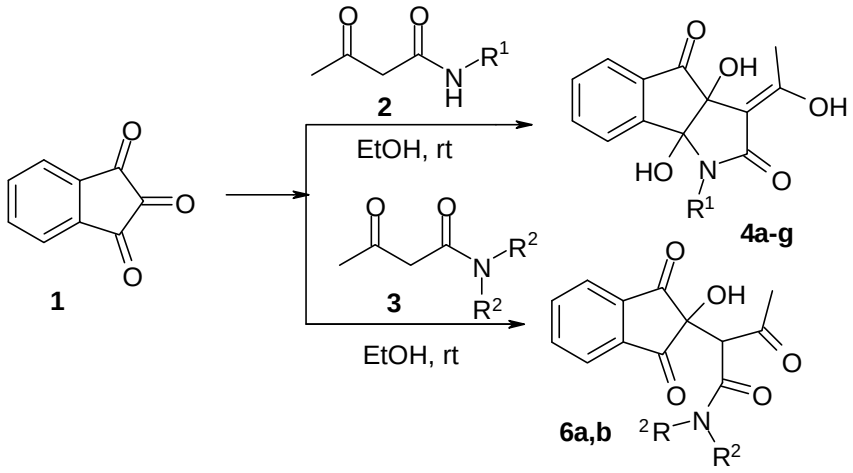
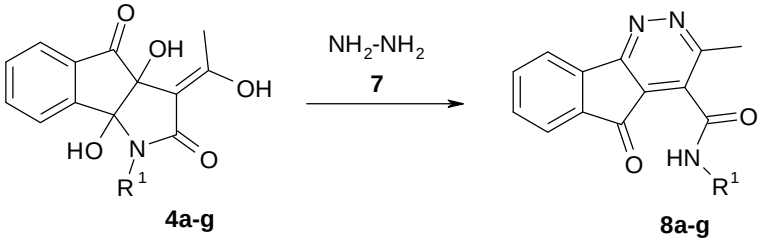
Abstract. It is known that ninhydrin has been utilized in many heterocyclic preparations [1]. We developed a simple and effective, straightforward, stereoselective synthesis of functionalized indenopyrroles **4a-g** with a good yield from the reaction of ninhydrin **1** and acetoacetic acid amides **2** in ethanol at room temperature. This method is cost-effective, environmentally and experimentally safe, easy to handle, clean and efficient.



R^1= Ph (4a,8a); 4-$CH_3C_6H_4$ (4b,8b); 2,4-$(CH_3)_2C_6H_3$ (4c,8c); 2-$CH_3OC_6H_4$ (4d,8d); 4-ClC_6H_4 (4e,8e); 2-ClC_6H_4 (4f, 8f); H (4g, 8g); R^2= Me (6a); Et (6b)

The interaction of ninhydrin **1** with *N*,*N*-dialkylacetoacetamides **3** as the methylene components under the same conditions led to the novel *N*,*N*-dialkyl-3-oxobutanamides **6a,b**.

Further we carried out the reaction of the indeno[1,2-*b*]pyrrole derivatives **4a-g** with hydrazine **7** in ethanol. The results of this study showed that the interaction of compounds **4** and **7** led to the formation of novel indeno[1,2-*c*]pyridazine derivatives **8a-g.**



All the products were characterized by IR, ^{1}H NMR, ^{13}C NMR, and mass spectroscopic studies. The structures of compounds **4g**, **4h**, **6b** and **8b** were confirmed by single crystal X-ray analysis.

References

1. Hansen D. B. The development of novel ninhydrin analoges / D. B. Hansen, M.M. Joullie // Chem. Soc. Rev. –2005. –Vol. 34. –P. 408–417.